

Sustain Or Die Building A Future 2

I have wrote about my sustainable building course in my book Building A Future, but one thing that was a key in that course and in this line of work sustainability.

Sustainability by definition has a lot more focus on the environment due to the fact that animals think of sustainability because from birth to death if they use up all resources they go extinct. I wonder if you were told that your home was going to be the cause of your extinction and death would that bother you. Daily there are toxic very unhealthy choices in building materials, making sick homes and I don't mean sick as in cool I mean off gassing (the releasing of a chemical into the air of your home) this is natural the earth does it every spring, this is caused by (geosmin) an organic compound released by a group of soil micro organisms called actinomycetes.

Actinomycetes are filamentous “prokaryotes.” microscopic organisms whose cells have no nucleus enclosing their DNA. Organisms that do have cell nuclei like plants, fungi, and humans and other animals are called “eukaryotes.”

Even man made things off gas like plastic and some particle board, apples do it and that gas Ethylene gas is a naturally-occurring hormone produced by some fruits as they ripen. The Asian culture uses this gas to preserve eggs. Without getting too into all that know that this was a big problem homes becoming toxic but due to people and their reaction to some off gas this has led to a new kind revival modified pioneer way of building. More natural

building materials less production and this brings me to the main point of writing this. What is sustainability?

That was something we really need to wrap our brain around, lucky for us it is not a new thing in fact if our ancestors had not of sustained and lived in a sustainable manner; we would not be here and would not have developed in the same way. So let's talk about sustainability. A great example there is a point where you say I just can't go on due to cost, ease, effort, and the payoff is just not there. Cost is an easy one if something costs too much to continue doing you must say it is not sustainable. The ease of some tasks are actually so hard that it is not a sustainable approach. If the effort needed to perform these tasks is so great that you could not even imagine attempting it, again it is not sustainable. These are just 3 reasons by far not all that needs to be considered but this will help explain sustainability. In construction I like to start with the who what when were why and how just like writing. Who will be doing the work and who are we getting the materials from, what are we building and what are we building out of when and where placement of a structure is paramount. Windows get put on the south side for north America where I am but if you were in another place you just need to know what side the sun is mostly on all year around. Windows can make a really nice home or a human cooker. The roof overhang will help reduce this but you need to see the place of construction in all seasons to know where the sun is in say late November December time. When you decide on all of that and you are choosing materials think of this how far

are materials coming from , how are they made, how many hands touched it before you and last and most important how renewable is that resource. Recycled material is usually the most renewable for the green washed mind, I say this because recycling requires the initial waste product and all of the energy and materials to make it and then sometimes it is a whole process to rework the material, this may be out sourced to a foreign country and then sent to you. The materials of building in history clay dug by hand from the ground, not a never ending supply but a small amount. Logs cut by hand again in modest amounts no joiners nails or the likes. We grew food in gardens small personal for the family and a few neighbours. The simple life meant if you have it you can use it but if you can't find it around close you can't use it, it's not sustainable. So it means can you get your materials close to the build and is that material a renewable resource with low embodied energy this is to say it is not a big process to make or obtain. Rare product leave them, mass produced products leave them as well the industry-industry is big and makes a huge impact on our air water all aspects are being assaulted and depleted the world will not stand for this mass construction and destruction of our plastic world we now live in. The size of a structure matters a very large building is not what human want or need, 12 bedroom homes unless you have 12 people in your family there is no need. If we were told that we were running out of supplies in the world would we just keep going, if you were told your out of money would you keep spending. If you were told that the products you were using to build houses today are toxic in many cases and a

non renewable resource would you just keep going? The answer on the tip of any conscientious mind would be no, you would be surprised that is what we are being told and sold and we keep buying into it. We have supported this for so long that we are now looking at the old ways of building as they are new and untested. Our rulers say we must use approved materials, approved for building says nothing about its sustainability or its toxicity to our planet but now we are sometimes forced into using them. A shelter in the woods worked on every year making it better cob, rocks, full logs moss chinking cedar shake roof these are sustainable. We have used bad building materials and practices show like homes on homes shows you that people can die from just two wrong materials coming into contact with each other and producing a toxic effect mould rot and other nasty things can occur. We need to separate from the masses as the herd mentality is not sustainable people are being left behind overlooked under housed pushed to the side left out and forgotten until they get in trouble then they are regulated and monitored governed taxed and the list goes on. I will tell you a made up story that illustrates that it is not a true story but that's not to say it has never happened.

Tully graduated school for construction sully worked in the industry for the last 40 years they were both building a house to live alone in. Tull found a great spot just out of town 20-30 km away so development would be slow getting to him but he would not have far to run supplies. Sully got a great deal in the subdivision he was building at work he makes enough money to buy and build and he is

going to use the waste materials from work, Tully is also using found materials from the property because he is outside the city or town they don't care much about the materials they more care the structure is sound. Sully was stopped by many permits only allowing certain building materials to be used and you guessed it industry made products only. Sully finds all the green products he can get sent from china and all over just because in the end it is a green product, saying nothing of it's renewability or embodied energy to create this product. Tully begins building and finding materials on the site he call a couple of contractors to help with the finishing and sits by his fire place outside watching the sun go down in his wooden hand made chair. Sully gets many people to help and sits in his back yard with a propane BBQ his neighbours are great they talk to him over the fence. Tully has no close housing nor people to talk to nothing but quiet and the odd wild animal going around the house.

You also need to think of your impact on the eco system by placing a dwelling there. Do you disrupt the flow of animals if so there will come a time where the animals will try and go back to the places they were from, in the city this is the situation of a bear down town needing to be killed so man can have his dwelling there.

Trends in building earliest buildings were made of sticks branches leaves materials that break down over time and though people thought more about the long term we now think beyond the individual and more about the resale and re-rental of the

house, no longer the home your parents built and gone is the pride of making something out of nothing. Then for more durability we began using still natural materials like rock, clay, timber and even some early concrete mixtures like hempcrete, this was like a clay slip like plaster but early versions were not as strong as now days. People found that a lot of the problems were caused by the meeting of the outside materials and the inside materials so we began trying to make a clear distinction between the two this led way to our R value this is the resistance level of the outside temperature and the inside heat flux. Some examples cotton bats about an R3, sheeps wool about an R3, straw R2-R4 all these depend on thickness and the total seal made by the insulation. Most insulations including modern man made ones can be higher but most are an Rvalue of 2-4 and that is good. The inside materials also have changed from plaster to gyprock essentially plaster board. There was the introduction of house wraps and membranes that keep the materials separated. This while stopping a lot of problems has made what some call a building crisis of sick home builders and unhealthy people. This has also caused a lot of people to go back to the start of building just past the cavemen but not into the modern day. Pioneers knew how to build healthy homes and everything needed to be maintained. In this go go go world we can't even take time to plaster our houses every year like my grandparents needed to and loved to do. There are a few kinds of barriers thermal , air/vapour, weather barrier as long as there are no breaks and it covers the entire walls it will act as a barrier. This is also known as a building envelope. But in keeping the outside elements out you must take care to use materials safe for you to be around breathing and living.

There are materials that create a barrier but are breathable they let air flow in and out but not always through. Hempcrete is an awesome product that now days is the best of both worlds it breaths or shall we say allows moisture to permeate then it dries out allowing the moisture to be released, it petrifies over time and the dry hempcrete removes carbon from the environment making this better then concrete that seems to get brittle over time.

The health of the people from the dawn of time to future times will rely on healthy sustainable choices in materials construction and placement. It is just my opinion but I think row housing, apartment buildings, any kind of people piling for housing leads to the overcrowded syndrome were we feel overwhelmed by mass populous. A house is a dwelling that protects you from direct rain, wind, sun, animals, outside elements. A home does all that while giving you the sense of protection comfort and joy.

In by gone times we felt good in caves and in soddy's but as time goes on we think smart houses are the way to go, the computers have proved to be very unstable but because of money flow we even have smart homes I have one movie for you to watch before deciding to go smart home computerized(Demon Seed) then make the right choice.

I feel less is always more going back through the building ages pioneers had the most earth friendly design but we can now improve on these designs and make very friendly and welcoming homes.

Here is the part where we get our hands dirty.

Step one sit on the land camp there get to know it.

Step two find the problem spots like streams when it rains, sink holes water flow forest lines, all things that will make you not want the home right there.

Step three find any or all materials for the first stages of construction, Foundation and frame. Step 4 track the sun for a full year (not by sitting there but by pictures but camping for a year on your land before building your home would be ideal.)

Step four in a modern age you should get permits for every stage of building from foundation to roof.

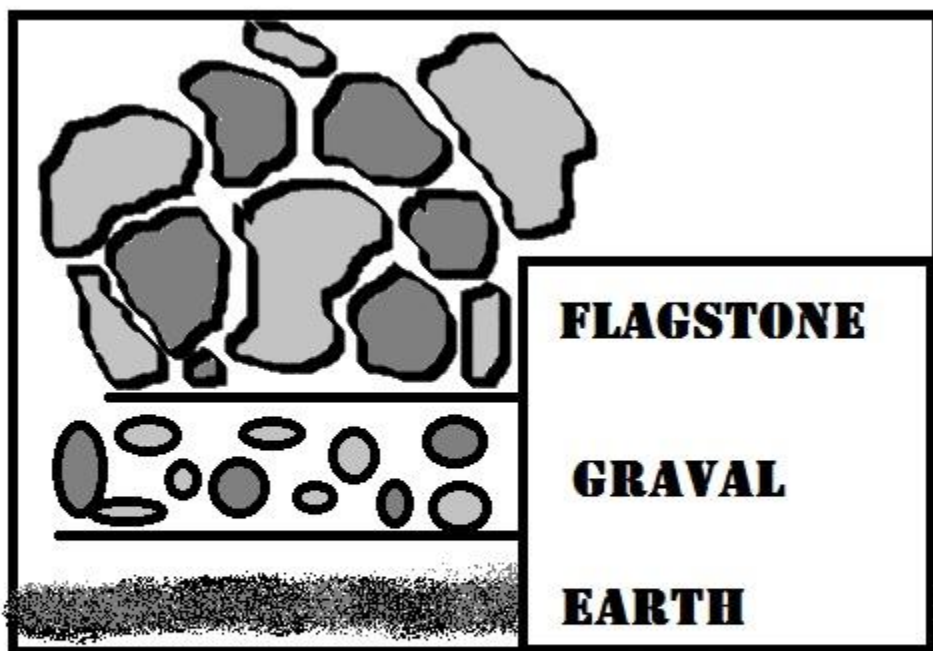
A note when getting permits in areas where they say no alternative building techniques are allowed try telling them it is a very old style of building and back it up by historical examples. These style like straw ball and Timber frame are all old styles tried tested and truly sustainable. I can not make building materials like concrete and I would not like the off gas of a plastic home I like the earth the trees and all the natural world has to offer. Building with the earth is not always easy and a lot of times when you are done it is not cheaper but the impact on the world will go down and the quality of homes will go up greatly. Most important your home will feel like home and we will take a great deal more pride in the sustainable home. I mentioned the cost being comparable in earth friendly builds one reason is because you can do more than minimal housing in this time we could have thermal barriers that breath as well as any modern additions like solar power water filtration better

insulation. A home that takes care of you, one hand washes the other you take care of maintaining your earth friendly home and it takes care of you and your family. Clean the slate of modern building disgrace and demand more earth friendly buildings. The industry like all industries is based off the sales if sales are up on straw bale home this will be the new trend but by the same token if we choose sick materials we will be sold more sick homes. We drive the trends only steered by the money men/women that want more and care less about our health than the pocket book. We need to show younger people the way to survive is to build a strong and sustainable future take only what you need, use everything you got help others see the future is only built off today's left overs if production stops then we are lost but if we learn to sustain we will live on from the cave to the grave.

Lets revisit Tully and Sully, after 40 years of living in these home Tully has a garden and has went solar, Sully had the city grow around him now he lives in a converted subdivision that now serves as a low income housing project. They both lost the job that got them there homes and now live hand to mouth. Sully get a welfare check that does pay for his home but there is not much left over for food on the BBQ. Tully has many gardens in sheds and outside he makes enough food to donate soups and fresh vegetables to a local soup kitchen. Sully gets his food there but has no idea that the choice of building materials 40 years ago set the two mens lives on very different paths.

Here is some practical info:

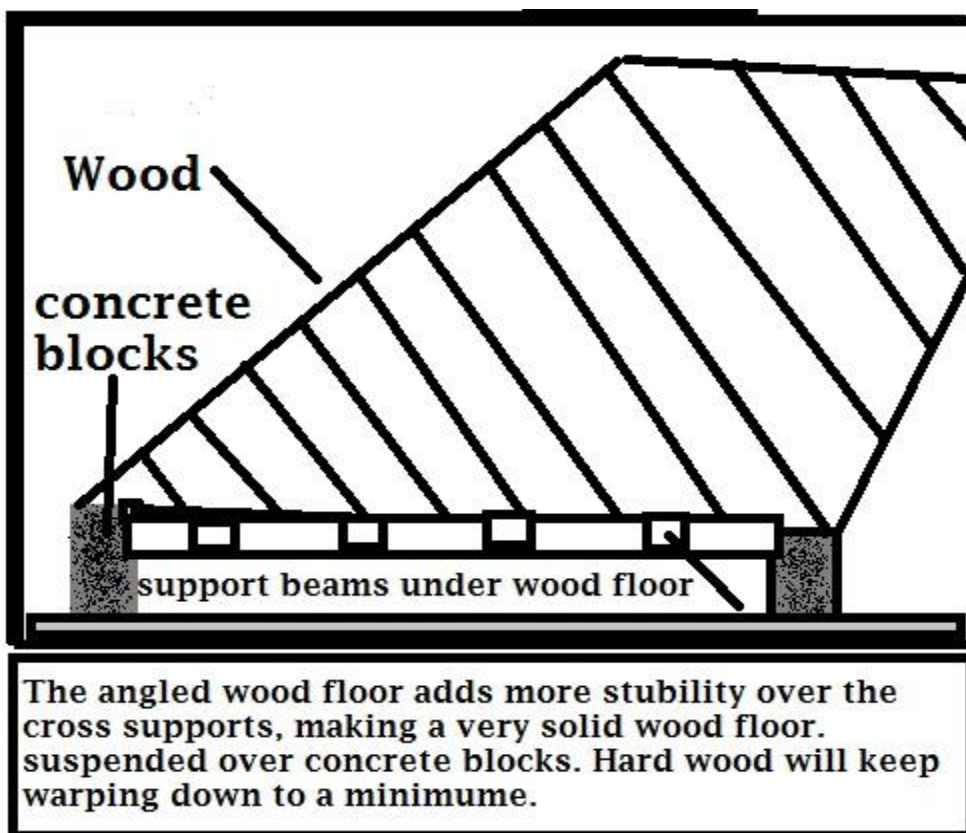
Foundations can be made many different ways this first diagram shows a simple flagstone foundation. Flagstone is flat rocks put together like a jigsaw puzzle with small spaces between the rocks. It is important to tamp/compact the gravel under the flagstone the more you compact it the less settling the rock will do.



FLAGSTONE FOUNDATION
compacted gravel with a loose layer
for the flagstone to sink into a bit.

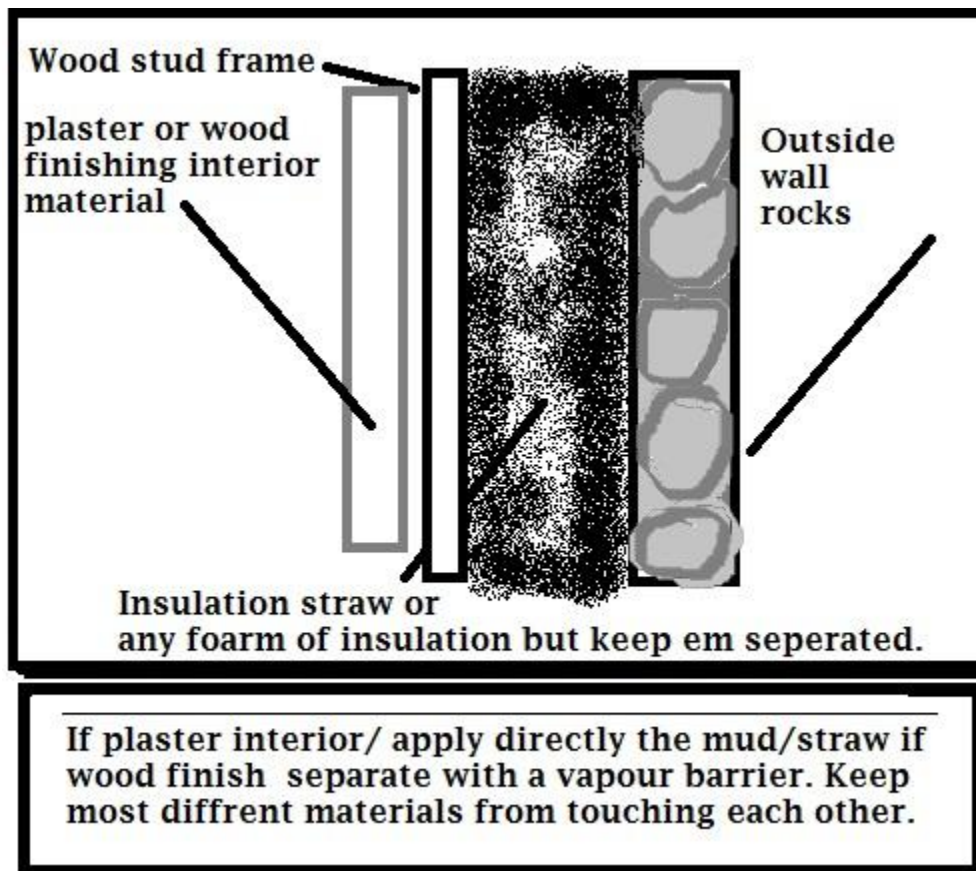
The layers can be any size but about 6-10 inches of fine gravel on top of the tamped earth, if your rocks are 4-6 inches thick you may want a two inch layer of loose gravel for the stones to settle into.

You need a good foundation many earth friendly builders make earthen floors. This was popular in Europe in the 14th century. The Earthen floor can be made a few different ways here is just one. A mixture of clay sand and straw (very fine cut) are poured onto the tamped gravel or earth foundation. The cob style mixture is smoothed out buy trowel like concrete. Finishing oil is placed on the smooth dry surface a lot of people use linseed oil. The key is to tamp the bejeebers out of it before placing any flooring on top of the tamped earth or gravel the more compacted the less movement and less chance of cracks developing over time. There is also just wood floor supported on blocks and cross beams the wood is secured on a frame to keep it off the ground this is sort of a non foundation-foundation.

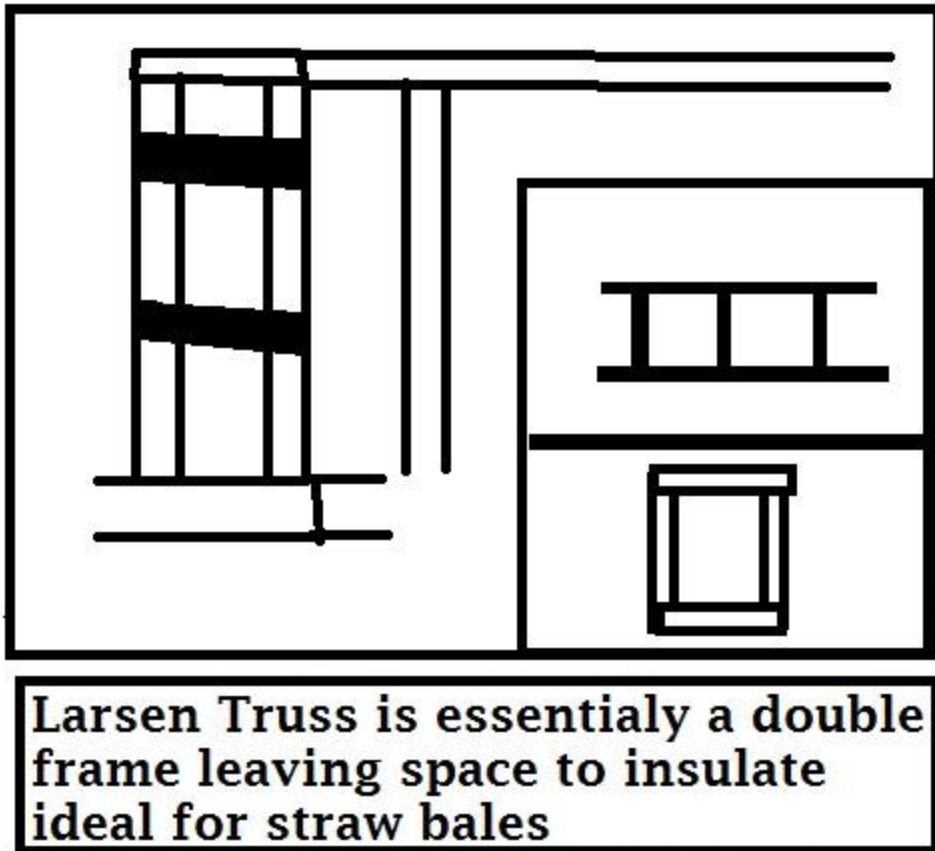


WOOD FLOOR

Walls can be made from many materials I have made a diagram of a rock outside and straw and wood inside. It is important to know materials interact like does it need to breath or does it need to be sealed. Factors like this change the diagram a bit depending on materials.



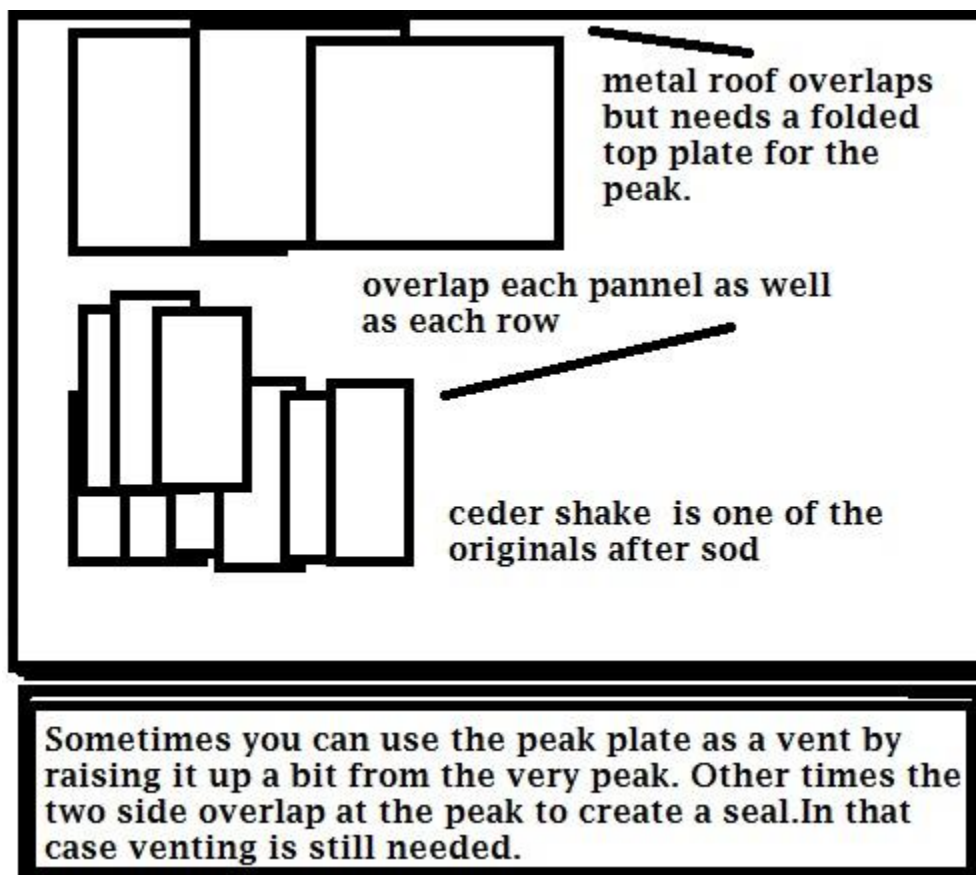
To make a straw bale fit into a wood frame you make what is called a Larsen truss, this is where you make two frames with enough space to fit a four foot thick space between.



This is a crude diagram for a very simple wall system. There is an inner and outer frame attached together. Instead of a single frame there is more space between the frame studs.

The thickness of a wall can make a difference for insulation but more important is the barrier between the outside elements and the interior of your home. Straw can be 4 feet thick but will somewhat allow weather to get through because it is a breathable material, with a finishing of clay/straw or plaster, Hempcrete. This will stop wind, cold, heat, locusts other outdoor elements. Your finishing or outer cladding makes a difference in maintaining the condition of your walls.

The Roof is very important as it stops the elements like rain and snow from getting inside the dwelling, and does not allow mold or rot to occur in the walls and floors. This also keeps your home healthy if done right. There are many ways to make a roof but all have trusses like the frame to hold the roof. You should always use under the roofing and on the trusses, a vapour barrier of some kind. The roof is actually sitting on top of the structure allowing venting to happen under the edges.

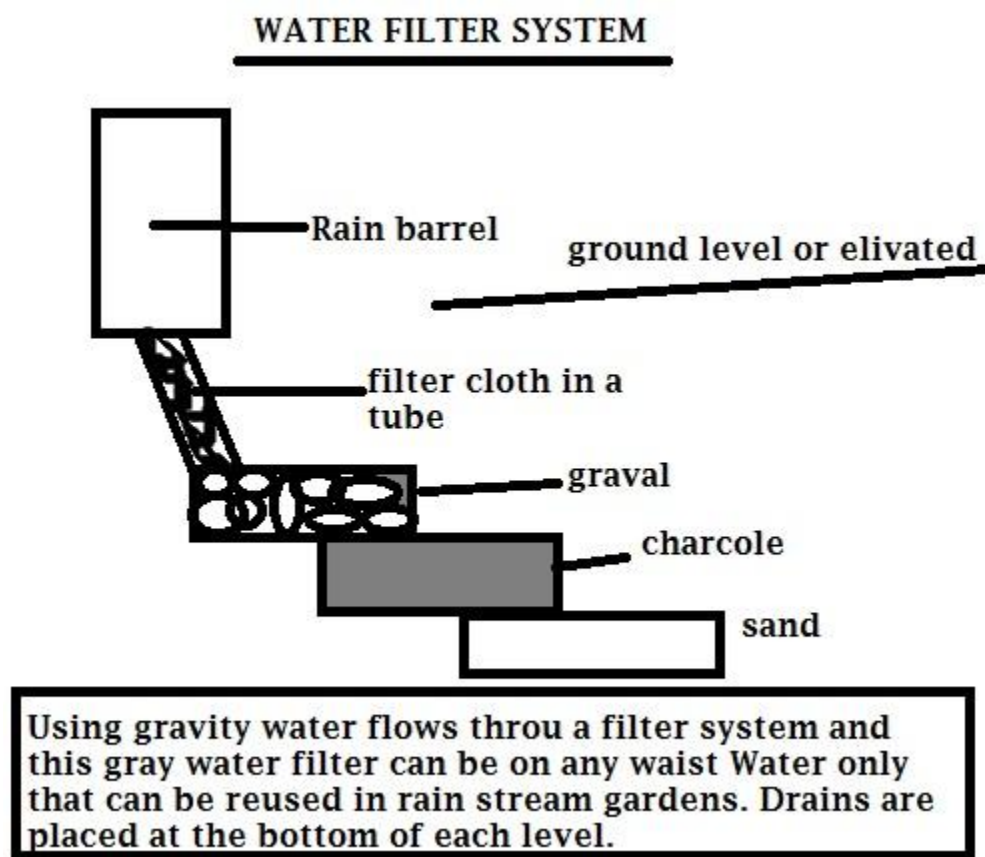


You need to create a seal but yet allow venting to happen in some cases you may need to add venting this is usually best under the bottom edge but can be more effective at the peak of the roof. Some sort of vapour barrier should be used under the exterior cladding. Some barriers are plywood,

house wrap, plastic, tar paper and other things depending on the kind of roof you are doing. Keep in mind that other than the foundation the roof can be paramount to the integrity of the home. If there is leakage there will be rot, bugs, collapse and this can cause sickness and injury. When thinking about sustainability you must consider the energy needed to obtain your roofing materials, the distance it came from in its total life process the health and longevity of your materials. When building a shelter in the woods you begin with a base like a foundation, walls that will support your roof as well as protect you from the elements and last but not least the roof usually made to wick water away from you and your dwelling so that pooling does not occur. The same is true for a home, less is more a lot of the times.

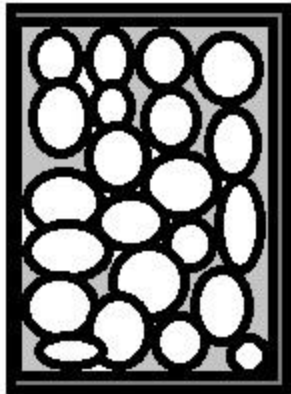
I would like to tell you about different materials you may not have heard of before the first is a wall material called hempcrete, This is a small amount of concrete mixed with an older style of cob that has clay, sand, and straw or other organic bulk. The very cool thing about hempcrete is that the end result eats up carbon from the atmosphere. The next is a wall material no load bearing called papercrete same idea as hempcrete but using paper shredded fine. The advantage is recycling. The green wash campaign tells you facts and figures to show how much recycling is going on but the real deal is that not everyone is doing it and not all recycling is being used, papercrete is you recycling and using the materials. This has a very low embodied energy level this is to say you need no transporting or processing by any other parties. Cord wood uses log rounds sliced about 2-6 inches thick with mortar or clay sand and straw around the log rounds standing on their side.

Roofing can be fun I saw a picture once of an upside down ship cut in half and the opening has a wall and door, very cool. The idea of a mobile home or tiny home becoming the main house with out-buildings or with additions built onto it. The main purpose of your home has always been shelter but the more creative as well as the more recycling you can get your house to do for you. I would like show you some things to help make your home more sustainable.



Water is a big thing just think of what cities do to handle waist and do that on a personal and echo conscious way think of the steps to getting water cleaned plastics reworked glass and food waist all are very good to work with.

Recycle glass and skids free found objects



A pannel with glass jars secured in a frame

This can be used as a window or a wall to let in coloured or clear light to gardens or homes.

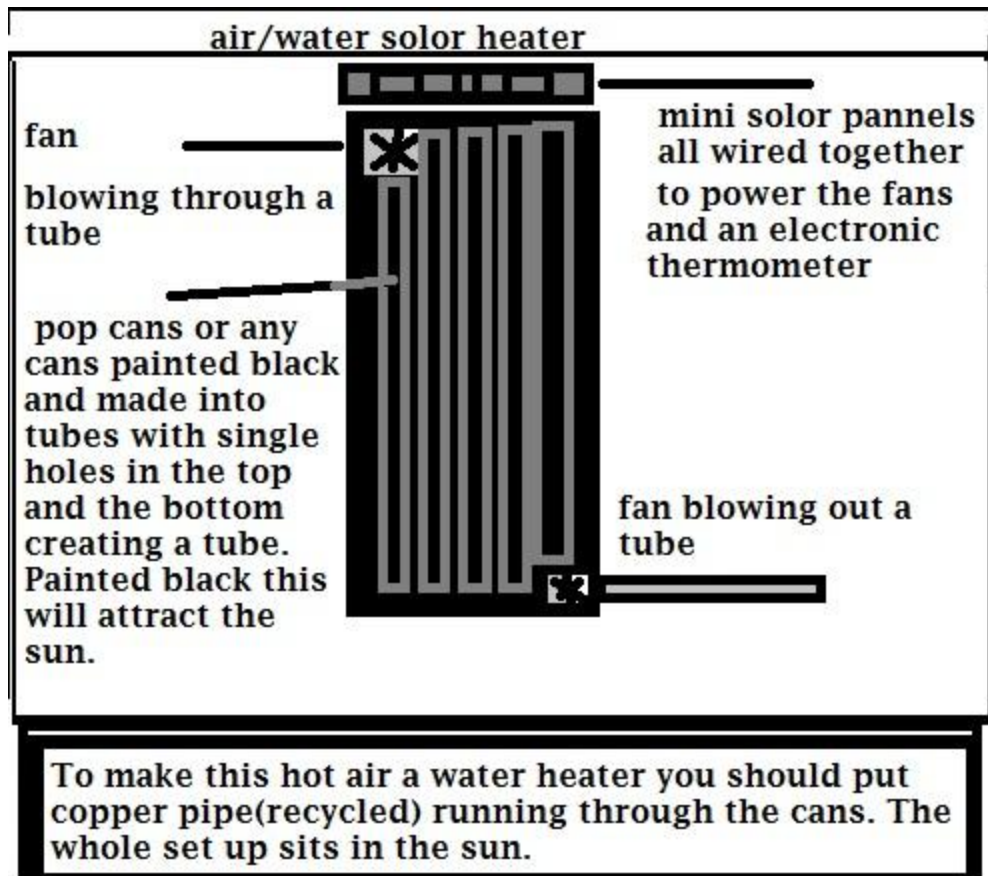


box garden from skids

Many things are being discarded into land fills and ditches it is our world take it clean it make it work for us, the ebb and flow and us.

When you stop garbage from becoming garbage and make it work you are doing your part and helping your Ebb flow with the tides and the life breath of all creatures, you become one and feel more peace of mind. Animals are being harmed every day by our waist make the garbage go away before you make the animals go away they do a lot more for the earth then we all do just by living in harmony with the flow of earth. We are aliens if we don't become natural being we are alien to our brother raven, wolf, bear, and fellow earth friendly being.

So as we can now see water and the management of water is a life sustaining concern that is overlooked we will die, thus making housing and all other green projects null and void like. Here is a way of making hot water or hot air .

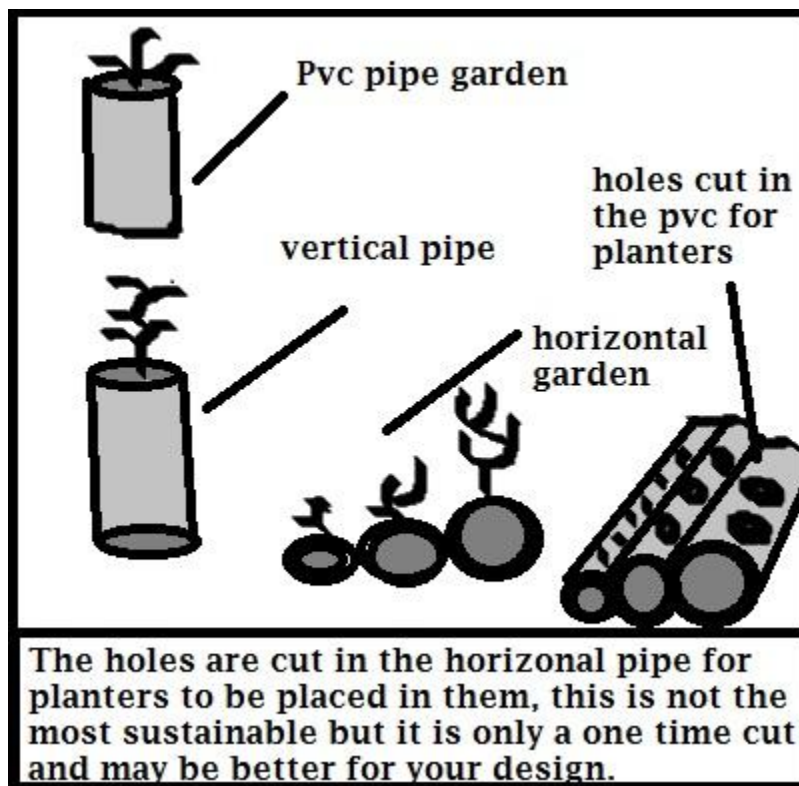


This panel is made usually behind glass or Plexiglas (that can be obtained from hockey arenas upgrading the glass around the rink, this happens all over every year. The panel is placed in the sun and can even be moved to track the sun's rays that are absorbed into the painted black cans. The solar panels for the computer fans to move the air if it is for air can be obtained in the form of lunar lights that charge in the day and discharge in the night all the positive wires are made to be one all the negative wires also made into one, then attached to the pos. and neg. of the fans. Remove all but one on/off switch to control your fans power. If you are doing the water heater no fans are needed but a small water pump to push water through the copper piping in the painted cans. Copper pipe can be recycled or salvaged but

must be sealed together through the cans like a radiator in one continuous line from intake to out put. Water can be found made used reused tapped and bottled all by you or by making systems like cities have to provide water to all, but is for your own home. This is sustainable because you do not need the outside world to create a nice living environment that will always take care of the inhabitants of your home. There are rules in some places about all this home grown resource management systems, if this stuff is important the rule is if you are too far away to access recourses from the cities and towns you are on your own. Take charge of your whole living experience you will be better off in the end because you have control not at the mercy of big industry that deals with the bottom line (that always seems to be money) but you get to deal with all humans bottom line quality of life. There are many trends in building and in life many are about the quick cash but some that are not part of a failing green wash campaign are actually showing you how to do things for yourself and the future of all humans. If we do not choose to sustain we will be a brief but very toxic blight on the landscape of history of the world. Our egos should not allow us to be so blind that we think all the plastic is not clogging the oceans and that ground water is not getting affected by oil fracking. Humans are responsible for all the toxic stuff they do live in consume we are no longer like the animals just trying to survive we are trying to make our egos the real world and real world problem are brushed under the carpet by big business and governments but most of all by each and every one of us. By not doing this stuff like solar and gray water catchment and gardening, we are taxing the recourse pool that we never seem to top up

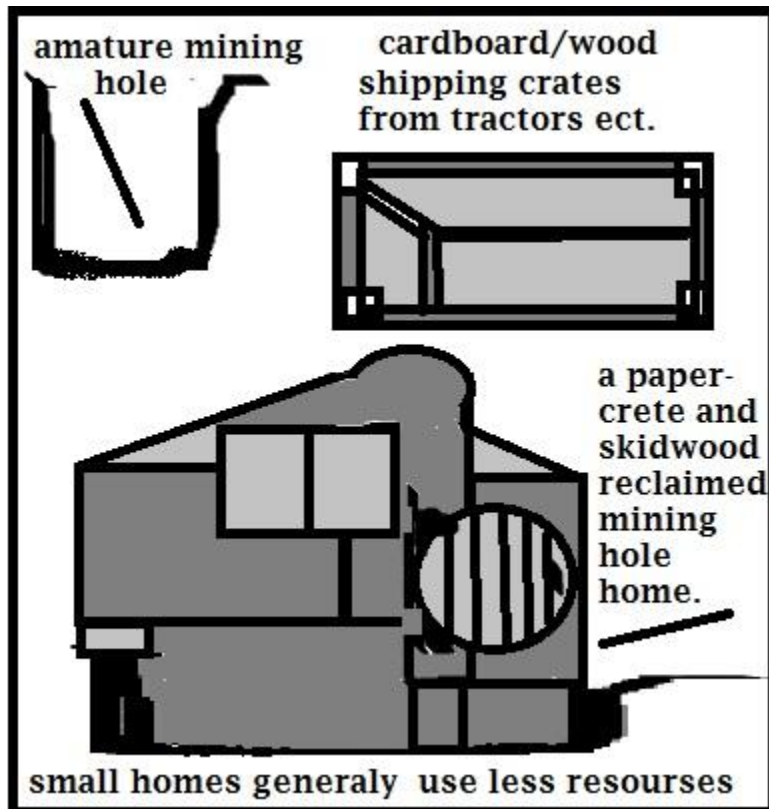
just deplete and move on. This by definition is not sustainable.

Hanging gardens and pipe gardens are like regular pot gardening but in different containers. Pvc pipe can be obtained from larger work sites waste as well as recycled from houses that are being gutted for demolition. Box gardens reduce the amount of soil and space needed for your garden and there for allows bigger gardens in smaller spaces.



The vertical pipe must have the bottom covered or on the ground so the soil does not fall out the bottom as well the horizontal needs the end covered unless you use more than landscaping cloth as a planter pod in the top/hole. You just want to keep the soil from coming out the ends. You can use two liter pop bottles as planters in the same way just cut the

tops off. Use your imagination when you look at the waist world you should see creative ways to re-use articles that make undesirable things very classy additions to your garden or home and even the work environment.



After prospecting at a claim in the woods sometimes there is a hole that must be filled back in after you are done and you must make it look as close to what it did before you started digging. By placing the wood/cardboard box skids over the hole you will see there is a lot more head room and the dwelling is not imposing on the landscape. The inside has a wood frame were more skids can be attached over time like hardwood flooring, sanded, varnished, and or painted. A few of them can be attached together and the

outer walls could be papercreted or removed and wood siding could replace the cardboard. You could also cob the basement as well as the outer walls. Tiny dwelling address every house problem very quickly as all the essentials are at arm's reach but this also makes things like water, heat, and storage an immediate subject needing to be addressed and thus you get right to it, not caught up in the finishing's of your home. A home is a work in progress as well a recycled home is a work in constant growth, by knowledge as well as use of new materials while still keeping the class up on our homes. Trash does not mean it looks like you live in a dump. There is building materials all around use just always talk to people before procuring materials and make sure permits allow what you are doing it is a sustainable system that issues permits it is for our safety and these people inspectors and the likes are a wealth of knowledge on the subject of building they can answer most questions you may have about construction. There are many courses teaching alternative building but in reality they are teaching the old ways and in a lot of cases the old way is the best way, in our past we cared about the sustainability of new things but somewhere along the line people started looking at the short term pay outs and not the age old question how long will that last. I feel to understand sustainability we must think about waking up and doing our day and can we keep doing what we need to do.

A person wakes up from a restful sleep the first thing they do is open their eyes so they can see where they are going and so that they do not keep sleeping. A person may have slippers waiting but if he doesn't and the floor is so cold they need socks that wasn't sustainable but putting slippers out everyday insures that even with a cold floor they will be fine to move on to the next step. Most people go to the washroom first thing but if there was no outhouse or washroom you would find it most difficult to go to the washroom. The same is true for our garbage producing money game. If we approached life as a day in our life and planned to be here very many days we would see that a lot of our products are just to make waste and a lot of our problems are due to short sighted thinking and not playing out in our mind, before we do things, the most logical outcome to our actions in actions or accepting of actions not sustainable for more than one person's pay check. The idea that we do things that are not linked to the final outcome is absurd. Everything in life creates a reaction. If you stand in the middle of the freeway and do nothing does that have no effect on anyone else, but yet we sit at home using power to watch shows about products made from plastic that end up killing fish and contaminating the oceans and we upgrade our computer to junk point oh. Maybe we need to take a look at the long term effects of our action and inactions. We make sure there is people in prison for smoking weed and let out people that are violent offenders the taxes go up the freedom goes down we pay for building permits and property taxes rent and in the end nobody can afford to build. This stuff is not the reason for our troubles it is the effect caused by years of short sighted thinking and

immediate personal gratification. The 1960s made us think a little of sustaining of the land and each other but some short sighted thinking got it all shut down. It is easy to blame the government that we all elect but we are all to blame for my friends it is everyone of our wants and desires in life that push the issue that we are not long term thinkers and if we could be we would be able to spit out the tit of our mothers stop drinking the milk of babys and grow into water drinkers food growers and all around self sustainers. The way we live makes the money that makes the whole world go around, instead of making sure we at least have socks when we wake up now that's thinking. As we play that metaphor out we need to have breakfast or we have no energy to deplete throughout the day that is not sustainable by the same token if we start the day with candy and gum we will not make it for the long haul. We can take today and have nothing tomorrow, or we can make today the preparation for tomorrow. The term just like "green" and "echo-friendly" are just words until the actions match up and really mean what they say they means instead of just green washing to sell more units. If we are all about the bottom line why not make a long lasting plan to have a good quality of life for all people. The takers have taken all that is left is to understand and fight the quiet fight. I raise up a garden and share with you, your mother makes clothing and my friends at the nudist camp get cold in the winter they spend all summer building tiny homes that people can rent throughout the year, these people give small amounts of gift from far and away that we sell at yard sales in the spring. The road to hell is paved with good intentions(lord Byron) the powers that be meant well in the beginning but to many chiefs as the saying

goes. We need to wake up our inner pioneer grow food make clothes and sustain if we don't we need other to do everything for us. Dependant for life but in our more recent history we did make all this stuff ourselves. Industrialization was a pacification method to make us not able to survive on our own. Our needs became monetary and plastic substitutes for glass accepted with open arms bleeding at the wrists the feeling of satisfaction at a job well done replaced with the job did not get done and you still owe us money. Fair became an affair with deception and the snake oil salesmen won out over logic and reason. We are courting our own extinction just by passively standing at the street corner selling our children's future to strangers that are getting stranger all the time. If we ask ourselves what is the price we would pay to have better lives, would we say that some momentary joy and money today is worth no water or food in the future. I for one believe that the only sustainable concern that we all should be thinking about is, if we don't do something about our whole approach on life we will not see a better day until everything we thought was forever like garden food clean water and shelter that does not make us sick in any way including sick in the pocket book. I have used many examples to try and show you what sustainability means to me it is just my opinion, I also was asked as a sustainable builder, "is it cheaper to build with earth friendly materials?" the quick answer is no but it is comparable but the long answer is that for your future comfort there is only one answer yes. It is cheaper to do things right, to know your home, and to have your home provide for you shelter from the elements, a place you feel safe to rest, and if you ever get confined to your home it will provide the life sustaining

necessities we all should have in the place we call home. We can always make a better future by opening our eyes to what our homes have been for the last while, and our minds to what we need to survive.

If anyone would like to have their project reviewed for sustainably ideas, green friendly advice, or just a pair of hands helping out contact me by way of face book or

e-mail

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